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NEW JAPANESE MARINE MOLLUSCA: GASTROPODA.

BY HENRY A. PILSBRY.

The new species of Gastropoda contained in recent sendings from Mr. Y. Hirase are herein described. The material studied contains a large number of species previously not known from Japanese waters, which I hope to enumerate in a future paper.

Some shells from a collection made in Sagami Bay for the Academy, by Miss A. C. Hartshorne, are also included in this account.

TEREBRIDÆ.

Terebra hedleyi n. sp. Pl. I, figs. 1, 1a.

Shell slender, the length about $5\frac{3}{4}$ times the diameter, solid, whitish, marked sparsely with brown dots on the cinguli and with streaks below them, the last whorl with some dots or spots in a circular row on the base.

Sculpture consisting of a wide above a narrower tuberculate cord, occupying somewhat more than half the total width of the whorl, below these cinguli there are four small equal spiral cords, the lowest one partly covered at the suture. On the last whorl these cords gradually diminish downward, those on the periphery and base being small and very low or subobsolete. The growth-striae are oblique on the cinguli, arcuate on the cords below them. Whorls $15\frac{1}{2}$, the first large and globose, first $1\frac{1}{2}$ smooth and gray-white. The last whorl abruptly contracts below, and is produced in a short anterior canal. Aperture small, irregularly rhombic, the outer lip thin and sinuous, columella vertical, abruptly bent to the left below, covered with a glossy white callous, which extends over the parietal wall.

Length 33.6, diam. 6 mm.; length of aperture 6 mm.; diam. of the first whorl 1 mm.

Hirado, Hizen. Types No. 85,946, A. N. S. P., from No. 1,412 of Mr. Hirase's collection.

This species is related to *T. serotina* A. and R., and the closely allied or identical *T. mariesi* Sm., but it is not costate below the tuberculate bands, and the protoconch is very much larger. Named in honor of Charles Hedley, of the Australian Museum.

***Terebra hizenensis* n. sp.** Pl. I, figs. 2, 2a.

Shell slender with straight lateral outlines, white, lusterless. Whorls $15\frac{1}{2}$, nearly flat, the first two smooth, the first whorl rather globose and convex. Sculpture of rather strong, even, slightly arcuate rounded ribs, about 21 in number on the last whorl, and nearly as wide as their intervals. These ribs are cut but not interrupted by a spiral groove defining a subsutural fasciole, the groove being deeper in the interstices. Below the groove or furrow there are 6 to 8 spiral cords, low on the summits of the ribs, stronger in the intervals; and above the furrow there are 4 or 5 finer spiral threads. The suture is rather deeply impressed. The small aperture is irregularly trapezoidal; columella vertical; canal recurved. Length 26, diam. 6, longest axis of aperture 6 mm.

Hirado, Hizen. Types No. 85,993, A. N. S. P., from No. 1,529 of Mr. Hirase's collection.

Similar to *T. subtextilis* Smith in color and sculpture, but in specimens of the same length this species is broader with a larger aperture.

***Terebra awajiensis* n. sp.** Pl. I, figs. 3, 3a.

Shell straightly acuminate, rather slender, the diameter contained about $4\frac{3}{4}$ times in the length. The upper half of each whorl is brownish cream-tinted, the lower half purplish or reddish-brown, usually paler or fading toward the suture below. The last whorl has a supra-peripheral purple-brown band, sharply defined on its upper edge, paler and fading below, where it is interrupted by light streaks. It extends as far as the basal contraction, but just below the periphery is divided by a narrow whitish spiral band. Sculpture of rather acute, nearly vertical riblets, which bend forward a little below, and on the last whorl are distinctly bent forward, and gradually diminish downward, disappearing at the subperipheral light band. The ribs are pale and interrupt the dark band. The intervals are concave and wider than the ribs, without spiral striation, but the whole surface shows faint growth-lines. Slightly below the upper third each whorl is cut by a spiral furrow interrupted by the ribs, leaving an oblong pit in each interval (but in some specimens the furrow is continuous though weak over the ribs). The pits are first developed on the 8th or 9th whorl, those above having no trace of the sulcus. Whorls about 18, the first 3 smooth, the apical whorl purple-black and having a diameter of about .3 mm.; subsequent whorls nearly flat, parted by a narrow, impressed suture, the last whorl rounded peripherally, strongly contracted below. Siphonal fasciole short and convex, bounded above by a low and inconspicuous ridge. Aperture a little less than one-

fourth the length of the shell, acuminate above, with a deep and wide basal channel. Columella brown, with a low, wide and very indistinct basal fold, below which it is bent somewhat to the left. Parietal wall covered with a thin transparent varnish.

Length 37, diam. 8 mm.; length of aperture 8.8 mm.; 21 ribs on last whorl.

Length 35, diam. 7.3 mm.; length of aperture 8.7 mm.; 25 ribs on last whorl.

Fukura, Awaji. Types No. 86,004, A. N. S. P., from No. 1,352 of Mr. Hirase's collection.

This species is close to *T. nitida* Hinds in sculpture, but it is less slender, and the last whorl is more swollen peripherally and more contracted beneath. It differs from *T. lischkeana* in the smooth intercostal spaces.

***Parviterebra paucivolvis* n. sp.** Pl. I, fig. 4.

Shell lanceolate, moderately solid, white with four spiral series of squarish red-brown spots, the upper series bordering the suture below, two others at the periphery, and the fourth on the base. The suture is widely gray-margined by transparency. Sculpture of close, fine, rounded longitudinal riblets, as wide as their intervals, and on the last whorl much smaller, almost obsolete. These are crossed by spiral subpunctate impressed lines, which are rather widely spaced. Whorls 7, but slightly convex, the last, as seen from the front, longer than the spire, gradually tapering downward. Aperture lanceolate, the columellar margin but slightly concave.

Length 12, diam. 3.4 mm.

Length 11.5, diam. 3 mm.

Yakujima, Ōsumi. Types No. 86,133, A. N. S. P., from No. 1,419 of Mr. Hirase's collection.

This species seems most closely related to the Australian *Euryta brazieri* Angas, which, however, has a larger aperture. Also to *E. pulchella* Angas (*Terebra angasi* Tryon) and *E. trilineata* Angas, both of which differ in details of form and coloration. The small Japanese *T. tantilla* Smith is diversely sculptured and belongs to a different section. The Australian species mentioned are placed in the subgenus *Euryta* by Angas and Tryon, but they are not related to the type of *Euryta* (now *Mazatlanina*). I propose for them the genus *Parviterebra*, characterized by the small number of whorls, absence of any groove defining a subsutural band, and by the long, gradually tapering body-whorl without a differentiated siphonal fasciole at the base, the columella straight to its abrupt truncation below. This

genus is not closely related to *Terebra* or the subgenus *Mazatlanina*, but seems to belong to the *Terebridae*. The Japanese species defined above is the type of this group.

CONIDÆ.

Conus dormitor n. sp. Pl. I, figs. 9, 9a.

Shell rather narrow and long, the diameter somewhat more than $\frac{1}{3}$ the length, the spire elevated, concave-sided, $\frac{1}{4}$ the length of the shell. The apex is broken off, 11 whorls remaining, the peripheral angle of each projecting above the suture. The last $2\frac{1}{2}$ are even at the periphery, but those preceding are nodulose. The concave, steeply sloping upper surface of each whorl is closely and regularly, finely costulate, the riblets arcuate, and decussated by several unequal spiral shallow grooves. The last whorl has almost straight lateral outlines, and is sculptured with closely punctate spiral grooves, very faint near the angle of the whorls, but becoming stronger and closer toward the base. The siphonal fasciole is closely spirally striate, not punctate. The aperture is long, narrow, and of equal width throughout.

Length 44, diam. 16 mm.; aperture 34 mm. long.

Kikai, Osumi, in a deposit probably Pliocene. Types No. 85,950, A. N. S. P., from No. 1,552 of Mr. Hirase's collection.

This cone is related to *C. acutangulus* Lam., but is longer than that species. *C. aculeiformis* Rve. is similar in shape, but differs in sculpture. The specimens show no color.

Conus kikaiensis n. sp. Pl. I, figs. 8, 8a.

Shell long and narrow, the diameter about one-third the length, the elevated and slightly concave-sided spire one-fourth the length. Whorls remaining 10, nearly flat and steeply sloping, the smooth peripheral angle projecting a little above the suture, the surface above it sculptured with 3 to 5 low, unequal spiral cords, and fine, arcuate growth-lines. Lateral outlines of the last whorl nearly straight. Sculpture of regular, rather strong, narrow spiral grooves, which are somewhat striate across, weaker above. There are 23-25 of these grooves above the convex siphonal fasciole, which is indistinctly finely striate spirally. In some specimens the flat intervals between the grooves are divided in the middle by a smaller groove.

Length 40-41, diam. 13 mm.

Kikai, Osumi; fossil in a Pliocene (?) deposit. Types No. 85,948, A. N. S. P., from No. 1,553 of Mr. Hirase's collection.

This species is not unlike *C. dormitor* and *C. aculeiformis* in general shape, but it differs essentially from both in the sculpture of the spire.

The outer lip is a good deal damaged in both of the specimens received.

***Conus gratacapii* n. sp.** Pl. I, figs. 10, 10a.

Shell slender and lengthened, the diameter somewhat exceeding one-third of the length, the high straight-sided spire occupying two-fifths the length of the shell. Apex broken. 12 whorls remaining are flat, with the smooth peripheral angle immediately above the suture, but scarcely projecting, a little more prominent on the upper than on the lower whorls. The surface of each whorl is a trifle concave, and sculptured with about 6 low, unequal spiral cords. Below the peripheral angle the last whorl is sculptured with about 25 spiral grooves, weaker above, stronger and closer below; and the growth-striae curve strongly backward near the angle. The aperture is very narrow, and of equal width throughout, and two-thirds as long as the shell.

Length 30, diam. 11 mm.; length of aperture 20 mm.

Length 31, diam. 11.5 mm.; length of aperture 20.3 mm.

Kikai, Osumi, in a Pliocene (?) deposit. Types No. 85,947, A. N. S. P., from No. 1,554 of Mr. Hirase's collection.

This peculiar species resembles *C. kikaiensis* in sculpture, but is unlike that in form. It is named for Mr. L. P. Gratacap, of the American Museum of Natural History.

PLEUROTOMIDÆ.

***Drillia streptonotus* n. sp.** Pl. III, figs. 18, 18a, 18b.

Shell slender and turrite, solid, light brown with an obscure band below the suture and another on the base. Sculpture of regular, subvertical rounded folds as wide as their intervals, about 18 in number on the last whorl, where they disappear a short distance below the periphery. These are crossed by numerous spiral threads, alternately larger and smaller, but on the lower, contracted half of the last whorl the spirals are regular and equal. Under a strong lens the whole surface is seen to be covered with densely crowded rows of minute papillae. Whorls $9\frac{1}{2}$, strongly convex. The first whorl is smooth and rounded; then an acute peripheral keel begins, and a whorl and a half later low radial sculpture and fine papillae appear. The first two or three sculptured whorls are angular, the keel persisting to the end in the peripheral thread. Aperture flask-shaped, wider above, the outer lip with about 6 small teeth within, arranged in pairs; deeply excised above, and produced in a short recurved spout at the anal sinus; contracted below to form a short siphonal canal.

Length 8.8, diam. 2.8 mm.; length of aperture 3 mm.

Length 6.9, diam. 2.3 mm.

Hirado, Hizen. Types No. 86,128, A. N. S. P., from No. 1,416b of Mr. Hirase's collection.

Distinct by its turrite shape, convex whorls and spout-like anal sinus, and the beautiful minute sculpture, hardly visible without a compound microscope.

Drillia albiguttata n. sp. Pl. III, fig. 19.

This species, of which only more or less beach-worn specimens have been received, is extremely similar to *D. zebra* Lam. of the West Indies. It is somewhat more slender. The ground color is chocolate. The sculpture consists of thick longitudinal ribs, 12 on the last whorl, each with a white spot at the shoulder, another below the middle of the last whorl, and there is a white band around the siphonal fasciole. There is a seam-like welt below the suture, and the unworn intervals between the ribs are sculptured with alternately large and small spiral cords. Whether these pass over the ribs or not cannot be ascertained from the examples examined. The lip and anal sinus are like those parts in *D. zebra*.

Length 11, diam. 4.5 mm.

Seto, Kii. Types No. 86,122, A. N. S. P., from No. 1,349 of Mr. Hirase's collection.

Daphnella radula n. sp. Pl. II, figs. 17, 17a.

Shell fusiform, rather solid, pale brown, indistinctly mottled with white and marked with short brown lines on the larger spiral cords, a series of alternately white and brown squarish spots below the suture. Surface sharply sculptured with alternate spiral cords and threads, about 52 in all on the last whorl, intersected by fine raised longitudinal threads, prominent where they cross the spirals. The lower edge of the anal fasciole is defined by a sulcus slightly unlike the other intervals, where the growth-lines bend abruptly backward. Whorls 8, the first two brown, with the usual diagonally intersecting grooves of *Daphnella*, the next whorl with three spirals. Last whorl long, tapering above and below. Aperture more than half the shell's length. Outer lip thick but beveled to an edge, obliquely and deeply excised above, a little sinuated near the base. The anterior channel is short and rather shallow.

Length 13.5, diam. 5 mm.; length of aperture 7.7 mm.

Hirado, Hizen. Types No. 85,965, A. N. S. P., from No. 903a of Mr. Hirase's collection.

The shell of this species is thick, like that of *Daphnella maculosa*

Pse.; but it is noticeably wider than that, with a more ample aperture and entirely different coloration.

Mangilia pura n. sp. Pl. II, figs. 15, 15a.

Shell fusiform, rather thin, cream-white, indistinctly stained with brown in some places below the suture. Sculpture of curved, slightly sinuous, rounded longitudinal ribs, slightly narrower than their concave intervals, and about 21 in number on the last whorl; the last rib much larger, forming a stout lip-varix. These are crossed by many spaced spiral threads passing over ribs and intervals, and about 30 in number on the last whorl. The intervals between these threads are sometimes divided by a secondary threadlet; and there is throughout a very minute, even and regular granulation produced by the intersection of spiral and longitudinal striæ. Whorls about 8, the first two rounded, and with delicate spaced costulæ, forming a trochoidal nucleus; the last whorl slightly ascending in front. Aperture long and narrow, obtuse at the ends, smooth within, slightly retracted above.

Length 13, diam. 4.7 mm.; length of aperture 7.7 mm.

Length 9.8, diam. 3.8 mm.

Hirado, Hizen. Types No. 85,974, A. N. S. P., from No. 1,527 of Mr. Hirase's collection.

This species seems to be similar to *M. cylindrica* Reeve, but that shell is more slender.

Mangilia semicarinata n. sp. Pl. II, figs. 16, 16a.

Shell fusiform-turrite, white with some brown stains below the suture and a brown spot at the middle of the lip-varix; rather thin. Sculpture of many slightly oblique and arcuate longitudinal riblets about as wide as their intervals, and sixteen in number on the last whorl. These are crossed by spaced spiral threads, about 18 from the shoulder down on the last whorl, a little widened where they pass over the riblets. The spaces between the threads and above the shoulder are very finely striate spirally. Whorls 7, the first $1\frac{1}{2}$ rounded, radially weakly costulate, several whorls following convex, rounded, the last 2 or 3 whorls angular at the shoulder. The last whorl bears a narrow, elevated, arcuate lip-varix. Aperture narrow, both lips slightly arcuate; blunt at the ends, smooth within. Anal sinus rather deep and rounded, the varix curving back of it.

Length 7, diam. 2.7 mm.; length of aperture 2.7 mm.

Hirado, Hizen. Types No. 86,124, A. N. S. P., from No. 1,520 of Mr. Hirase's collection.

Mangilia kamakurana n. sp. Pl. II, figs. 11, 11a.

Shell very small, white with a brown spot in the middle of the lip-varix, the spire terraced, lower half conic. Sculpture of slightly curved obliquely longitudinal ribs, 11 on the last whorl, the last one, behind the lip, much larger. These are crossed by spaced spiral threads, with smaller threads between them, the intervals still more finely striate spirally. Whorls 5 (the embryonic ones broken off), strongly angular near the middle, flattened and sloping above the angle, contracting below it; the last whorl similarly angular, convex below the angle, contracted near the base. Aperture oblong, the columellar margin concave above the middle. Outer lip thick, with a moderately deep rounded sinus above; smooth within.

Length 4.7, diam. 2 mm.

Kamakura, Sagami. Type No. 70,940, A. N. S. P. No. 71,025, from Japan, without exact locality, is the same species.

Mangilia cinnamomea peraffinis n. subsp. Pl. II, figs. 12, 12a.

Shell stoutly fusiform, glossy, purple-brown, becoming flesh-colored at the anterior end, with a broad white band at the periphery, and three indistinct, equally spaced whitish bands on the sloping surface below it. Sculpture of longitudinal ribs about half as wide as the concave intervals and 9 in number on the last whorl. Whorls 7, those of the spire subangular in the middle, the first two whorls having delicate widely spaced riblets. The last whorl is widest above but not angular, and tapers regularly downward. The aperture is rather narrow, blunt at both ends. The outer lip is slightly retracted above and below, and has about 9 small teeth within, those in the middle rather indistinct. The columella has about 8 slightly larger short transverse wrinkles.

Length 7, diam. 3 mm.

Hirado, Hizen. Types No. 85,952, A. N. S. P., from No. 1,519 of Mr. Hirase's collection.

This pretty *Cythara* corresponds fairly well with *M. cinnamomea* Hinds¹ except in color. It differs from *M. planilabrum* Reeve² in having no angular projection of the lip above.

Mangilia (Cythara) hirasei n. sp. Pl. II, figs. 13, 13a.

Shell irregularly biconic, resembling *M. decussata* Pse. and *delacouriana* Cr. in shape; thick and solid; whitish, indistinctly marked with about 4 yellowish spots on the front slope of each rib, and corresponding brown spots on the lip-varix, and with a band composed of 4 to 6

¹ Zool. Voy. "Sulphur," Pl. 9, fig. 1.

² Conch. Icon., *Mangelia*, Pl. 6, fig. 43.

purple-brown lines below the suture. Sculpture of longitudinal rounded ribs parted by wider concave intervals, and 10 or 11 in number on the last whorl. The last rib is much larger and forms the lip-varix. About 30 spiral threads, on the last whorl, cross the ribs and intervals, sometimes with minor threads between them. The spaces between these threads are evenly granulose by the decussation of growth-lines and spiral striæ, there being about four spiral series of granules in each interval. Whorls $7\frac{1}{2}$, the first $2\frac{1}{4}$ smooth and rounded, the rest subangular in the middle, the last whorl shouldered above, the shoulder rounded. Aperture narrow. Outer lip nearly straight, with about 8 white teeth within; columella white, with four or five small entering folds, increased to 8 or 10 at the margin, and with several on the parietal wall.

Length 8, diam. 3.6 mm.

Length 7, diam. 3 mm.

Hirado, Hizen. Types No. 85,975, A. N. S. P., from No. 1,516 of Mr. Hirase's collection.

This species differs from *M. decussata* and *delacouriana* in its minute sculpture of regular, squarish granules.

***Clathurella chichijimana* n. sp.** Pl. I, figs. 7, 7a, 7b.

Shell small, solid, fusiform, gray-white with five black-brown and the same number of white longitudinal stripes on the ribs, sometimes continuous, sometimes dislocated. Sculpture of 10 strong longitudinal ribs crossed by spiral threads which swell into tubercles on the ribs, and are 9 or 10 in number on the last whorl. Whorls 7, the first $2\frac{1}{2}$ yellow, rounded, forming a trochiform protoconch, sculptured with vertical riblets decussated by delicate, obliquely forward-descending striæ. The junction of the protoconch and the sculptured shell is very oblique and sharply defined.

Aperture narrow, with a deep sinus above. Outer lip with four small teeth within.

Length 4, diam. 1.7 mm.

Chichijima, Ogasawara. Types No. 86,127, A. N. S. P., from No. 1,439 of Mr. Hirase's collection.

This species of the group of *C. tinctoria* is closely related to *C. maculosa* Pse., but differs in having the spirals conspicuously swollen where they cross the ribs. *C. dichroma* Sturany is very similar, but whether it agrees in minor details cannot be known from the brief description.

***Clathurella centrosa* n. sp.** Pl. I, figs. 6, 6a.

Shell small, fusiform, solid, white with a series of brown spots below the suture on alternate ribs, and a brown band on the base. Sculpture

of numerous longitudinal ribs slightly narrower than their intervals, and about 13 in number on the last whorl. These are crossed by spiral cords, narrower than their intervals, of which there are 6 on the last whorl, followed by a costate space, as though a cord had been omitted, and then 4 more beaded, oblique cords on the narrow, lower part of the whorl. Apex broken off, $4\frac{1}{2}$ whorls remaining, the last with a thick varix behind the outer lip. Aperture narrow with two low teeth within the outer lip; anal sinus deep and rounded.

Length 4, diam. 1.9 mm.

Hahajima, Ogasawara. Types No. 86,125, A. N. S. P., from No. 1,384 of Mr. Hirase's collection.

***Clathurella lischkeana* n. sp.** Pl. II, figs. 14, 14a.

Shell turrit with rather wide spire, solid and strong, orange-colored, with a black band below the suture terminating behind the lip-varix, and an ill-defined brown band below the periphery. There is also a black spot on each side of both the anal and the siphonal sinus. Sculpture of strong, rounded longitudinal ribs about as wide as their concave intervals, strongest on the periphery and above, diminishing rapidly on the contracting base, and 9 in number on the last whorl, the last one much higher, more prominent and longer below, forming the lip-varix. Rather coarse spiral cords pass over these ribs and their intervals, 4 or 5 of them visible on the penultimate whorl. Whorls about 6 besides the nucleus, which is broken from the specimens before me. They are convex and separated by a deep suture. Aperture small, widest in the middle, with a deep rounded sinus above, which is cut into the thick lip-varix a short distance below the suture. The outer lip has a large black-brown spot within below the sinus and another near the base, and there are several (usually 3) low teeth within.

Length 5.8, diam 2.5 mm.

Hahajima, Ogasawara. Types No. 85,957, A. N. S. P., from No. 1,388 of Mr. Hirase's collection.

This little orange-and-black species resembles Reeve's figure of his *Pleurotoma nassoides*, but it is only half the size of that, and is a conspicuously thick and solid shell, not "thin as though pellucid" or "semitransparent," as Reeve states of his *nassoides*.

MITRIDÆ.

***Mitra hirasei* n. sp.** Pl. III, figs. 21, 21a.

Shell thick-fusiform, solid, lusterless, or with two broad spiral bands and some longitudinal streaks of rose, the paler ground-color

showing only in an ill-defined median band and some pale streaks. Sculpture of narrow spiral ridges parted by wider intervals, and alternately smaller, the penultimate whorl with about 5 such primary spirals, last whorl with about 17 primary or larger and an equal number of smaller spirals (counted on the outer lip from suture to channel). There are also some much finer spiral threads. Longitudinal sculpture of rather wide-spaced grooves, cutting the spirals and intervals. The larger spiral ridges are marked with a stippled or articulated line of brown. Embryonic whorls wanting; subsequent whorls 7, convex, the last tapering to the base. Aperture narrow, smooth inside; columellar side nearly straight, with 5 plaits.

Length 27, diam. 11 mm.; length of aperture 17 mm.

Hirado, Hizen. Types No. 85,994, A. N. S. P., from No. 902 of Mr. Hirase's collection.

This species may be closely related to *Mitra helvacea* Phil. (*Zeitschr. f. Malak.*, 1851, p. 84), but that species has not been identified or figured in more than half a century since its publication, and the description is not conclusive. *M. pretiosa* is a somewhat similar species with a much larger spire. *M. rufilirata* A. and R., *Zool. "Samarang,"* Moll., p. 26, Pl. 10, fig. 26, is also very closely related, but it differs, apparently, in the more finely sculptured intervals between the spiral cords.

***Thala ogasawarana* n. sp.** Pl. III, fig. 22.

Shell very small, slender and fusiform, brown with a series of ill-defined whitish spots at the periphery. Surface evenly cancellate, there being about 6 spirals on the penultimate, 14 on the last whorl, crossed by longitudinals of the same size and spacing; the lower 4 spirals nearly continuous. Whorls $5\frac{1}{2}$; suture rather superficial, rising a little near the aperture. Aperture about half the total length, narrow throughout but slightly wider above. Outer lip thick, finely denticulate within, with a slight sinus above. Columella with 4 strong, transverse plaits.

Length 6, diam. 2 mm., aperture 3 mm. long.

Chichijima, Ogasawara. Types No. 86,000, A. N. S. P., from No. 1,436 of Mr. Hirase's collection.

Few of the species of this genus have been adequately described or illustrated. *T. exilis* (Rve.) seems related to this species. It is more tapering anteriorly and "pale violet-purple."

COLUMBELLIDÆ.

***Columbella turturina borealis* n. subsp.**

Smaller and less inflated than typical *turturina* Lam., and with the aperture narrower. Yellowish-chestnut-brown, with some bands of

white dots, and with alternate snowy and dark-brown spots below the suture, the former raised into low nodules in places. Base spirally striate. Lips lilac-tinted, the outer lip with about 8 tubercles within. Columella with the usual two folds, and a row of small tubercles.

Length 7, diam. 4.5 mm.

Length 6.5, diam. 3.8 mm.

Hachijojima, Izu. Types No. 86,002, A. N. S. P., from No. 1,391 of Mr. Hirase's collection.

C. deshayesii Crosse, *C. palumbina* Gld. and *C. sandwichensis* Pse., probably all one species, are larger than the above race, and more striate on the back.

***Columbella albinodulosa* var. *ogasawarana* n. subsp.** Pl. III, fig. 23.

Shell fusiform, solid, gray-white, closely lineolate vertically with brown, the lines irregular, and interrupted by two spiral belts of irregular brown and snowy dots and fretwork, and with two transverse chestnut spots or short bands upon the terminal varix; the brown lines sometimes partially coalescent, and the pattern interrupted in some specimens by a few broad snowy stripes. Some of the whorls of the spire are usually weakly nodulose below the suture, the nodules white. Whorls about 9, nearly flat, the last slightly convex, contracted below, and very weakly striated spirally on and near the short siphonal fasciole; expanded in a low rounded varix behind the outer lip. Aperture white, toothed within, there being about 7 teeth within the outer lip, 4 or 5 on the columellar margin, with a low, obtuse fold within.

Length 8.7, diam. 3.3 mm.; length of aperture 4 mm.

Hahajima, Ogasawara. Types No. 86,003, A. N. S. P., from No. 1,468 of Mr. Hirase's collection.

This form differs from *C. albinodulosa* as figured by Reeve³ and by Fischer⁴ in coloration, and in lacking spiral striation on the lower part of the body-whorl. It is also a smaller form, and very likely will prove to be specifically distinct.

C. albinodulosa seems, from the figures, to approach some forms of *C. varians* Sowb.

***Columbella liocyma* n. sp.** Pl. III, fig. 24.

Shell obesely fusiform, rather thin, rose-red with snow-white dots at rather wide intervals below the suture on the spire, and a whitish band there on the last whorl, where there are also several white dots along the border of the siphonal fasciole, which is dark brown tessellated with white. Sculpture of numerous smooth, rounded longitudinal ribs a

³ *Conch. Icon.*, Pl. 23, fig. 138.

⁴ *Journ. de Conchyl.*, 1901, p. 101, figs. 3-6.

little wider than their intervals, the contracted base and fasciole spirally lirate. Whorls 6-7, convex, the last convex below the suture and peripherally, contracted below, the longitudinal ribs absent on its last half, which is smooth except for a small rounded varix behind the lip, marked with a large white spot above and another in the middle. Both lips are dentate within, the outer margin with about 8 teeth, the upper ones, in the middle of the lip, stronger; inner lip with five weak teeth. Columella with one deeply placed basal fold.

Length 5, diam. 2.6 mm.

Length 5.7, diam. 2.8 mm.

Types No. 85,961, A. N. S. P., from No. 1,392 of Mr. Hirase's collection.

A beautiful rose-colored, smooth-waved little species.

Columbella somnium n. sp. Pl. III, figs. 28, 29.

Shell stoutly fusiform, solid and strong, variously colored: (1) pink, sprinkled with white dots, with a white band maculate with brown below the suture, and a peripheral line of white dots, the swollen lip-varix white with several brown spots, or (2) white with longitudinal ragged brown markings, mingled with a clear gray reticulation on the back of the last whorl. Surface glossy and nearly smooth, there being a few very low and inconspicuous nodules below the suture on the back of the last whorl, and 2 or 3 spiral cords above the short, convex siphonal fasciole, which is spirally coarsely striate. Spire with slightly convex lateral outlines; apex obtuse. Whorls 7, but slightly convex, the last broadly gibbous, varixed behind the outer lip. Aperture half the shell's length, the outer lip straight, lilac-tinted, with 8 teeth within, columella with a single broad, low, deeply placed fold, and a series of 8 teeth at the edge, which is lilac-tinted and distinct but not elevated.

Length 11.7 to 12.7, diam. 5 mm.

Yakujima, Osumi. Types No. 86,129, A. N. S. P., from No. 1,424 of Mr. Hirase's collection.

This beautiful species resembles *C. dunkeri* Tryon, but differs in the straightened outer lip, heavier varix and narrower mouth with stronger teeth.

Columbella hahajimana n. sp. Pl. III, fig. 25.

Shell very minute, obesely fusiform, moderately solid, yellowish marked with some faint angular brown lines or with white belts at suture, periphery and base, and marked with angular brown lines, and a row of oblong spots above the middle. Sculpture of many close,

small longitudinal folds which do not extend below the periphery, the narrow part of the base spirally striated. Aperture white, about half the length of the shell, narrow and sinuous, the outer lip toothed within, the columellar lip very minutely so.

Length 2.8, diam. 1.3 mm.

Hahajima, Ogasawara. Types No. 85,960, A. N. S. P., from No. 1,387 of Mr. Hirase's collection.

This small *Seminella* resembles *C. troglodytes* Souv. and *C. sinensis* Sowb., but the longitudinal plication is finer than in either. *C. sinensis* has been taken in Tokyo Bay.

***Columbella divaricata* n. sp.** Pl. III, fig. 26.

Shell fusiform, rather thin, not glossy, light olive-brown, marked with red-brown spiral lines which slowly converge forward from above and below, meeting in acute angles just below the periphery. About 5 of these lines may be counted in any one place on the penultimate whorl. Suture bordered below with a snow-white band which ascends the spire. Surface smooth except on the contracted base which is spirally lirate. Whorls about 6, nearly flat, the last without noticeable varix behind the acute lip. Aperture narrow and long, not dentate within, the columella only slightly concave.

Length 6, diam. 2 mm.

Hirado, Hizen. Types No. 85,972, A. N. S. P., from No. 1,411 of Mr. Hirase's collection.

This beautiful species is colored somewhat like *C. digglesi* Braz., which in other respects is totally unlike. I know of no related form.

MURICIDÆ.

***Coralliophila jeffreysi* var. *hiradoensis* nov.** Pl. III, fig. 27.

The shell in this form is fusiform, with the aperture noticeably longer than the spire. There are 7 or 8 strong folds on the last whorl, most prominent at the periphery. The whole surface is closely lirate spirally, the cords densely roughened with suberect scales. There are 17 primary cords on the last whorl above the prominent siphonal fasciole, not counting 4 or 5 smaller ones interpolated in the subperipheral region. The aperture is white within, with a dark-brown marginal border which is deeply sulcate. There are a few acute cords making the throat sulcate.

Length 29, diam. 15.5 mm.; length of aperture 16.5 mm.

Hirado, Hizen. Types No. 85,981, A. N. S. P., from No. 1,407 of Mr. Hirase's collection.

In *C. jeffreysi* Smith the aperture is smaller.

Ocinebra monoptera n. sp. Pl. IV, figs. 32, 32a.

Shell small, solid lusterless, ashy-gray. Sculpture of numerous small longitudinal folds, about 12 on the penultimate whorl, becoming obsolete below the periphery on the last whorl, crossed by numerous unequal, scaly spiral cords, about 20 on the last whorl. Whorls 6, the first rounded, forming a smooth mammillar protoconch, the rest angular in the middle, the last angular peripherally, flat and sloping above, convex below the angle, contracted downwards; expanding behind the lip in a very broad wing-like varix, triangular in section. Aperture oval, the outer lip built forward in a thin rim, and with two low fold-like teeth within. Anterior canal closed, tubular.

Length 12.5, diam. 7.2 mm.

Hirado, Hizen. Types No. 86,121, A. N. S. P., from No. 1,522 of Mr. Hirase's collection.

This peculiar little species resembles the larger *O. nassoides* Reeve,⁵ but the wing is wide below, not notched there, and the longitudinal ribs are weaker. *O. japonica* Dkr. is a much larger and multivaricose shell, but seems to be related to this. Reeve's *Triton nassoides* has been referred to *Nassaria*, but it has little resemblance to the type of that genus.

Purpura tosana n. sp. Pl. III, fig. 30.

Shell small, imperforate, fusiform, solid, gray-white with an interrupted black-brown band below the suture, another below the periphery and a less distinct one at the base. Sculpture of numerous longitudinal rounded folds or waves, many of them followed by a raised line marking a former peristome. These folds are more distinct on the spire than on the last whorl, where there are 10 to 15 of them. The folds are crossed by numerous strong, rounded spiral cords, which are often weakly striate in the same direction, are wider than their deep intervals, and pass equally over folds and valleys. There are about 10 of these spiral cords on the last whorl, besides some small ones below the suture and in the intervals of the large cords on the basal slope. The interstices in well-preserved shells are delicately, closely lamellose. The spire is rather slender and acute. There are about 7 whorls in perfect shells, the first two forming a smooth, bulbous, shortly cylindric nucleus. Subsequent whorls are somewhat concave below the suture, then convex. The last whorl is inflated peripherally, contracted below, with a plicate basal fasciole. The aperture is slightly more than half the length of the shell, dark purplish-brown with light bands

⁵ *Conch. Icon.*, II, *Triton*, Pl. 20, fig. 96.

within. Outer lip whitish, beveled, and furnished with 3 to 6 small tubercles within. Basal canal short and open.

Length 14, diam. 7.3 to 7.7, length of aperture 8 mm.

Kashiwajima, Tosa. Types No. 85,991, A. N. S. P., from No. 1,375 of Mr. Hirase's collection.

This small species, unusually slender for a *Purpura*, seems to have no near relatives in the Orient.

Sistrum (Ricinula) morus var. *borealis* n. v. Pl. III, fig. 31.

Shell biconic-oblong, faintly pink-tinted white, the mouth lilac-tinted. The whole shell is longitudinally costate, the ribs rounded, as wide as the intervals, and continuous from whorl to whorl. These are crossed by two strong ridges on the whorls of the spire, one immediately below, one just above the suture, rising into short spines or points at the intersections. On the last whorl there are 4 or 5 prominent spiral ridges, the first close to the suture, the next and most prominent at the angular shoulder; all are spinose where they cross the longitudinal ribs. Between these principal spirals there are spiral cords throughout. The siphonal fasciole is prominent, leaving an umbilical crevice. There are 5 teeth within the outer lip, the upper two large, the others small.

Length 14, diam. 8.5 mm.

Length 12.5, diam. 8 mm.

Hachijojima, Izu. Types No. 85,982, from No. 1,401 of Mr. Hirase's collection.

The biconic form, pale color and rough sculpture differentiate this from all forms of the polymorphic *morus* group known to me; and it will probably prove to be constantly distinct enough for specific rank, though in view of the variability of *R. morus* I have considered this northern form to be a subspecies of the tropical *morus*.

FUSIDÆ.

Fusus suboblitus n. sp. Pl. I, fig. 5.

Shell fusiform, widest in the middle, whitish with a brown band below the suture and another below the periphery, the anterior canal in part brown; there are also some indistinct brown longitudinal streaks. Sculpture of numerous longitudinal folds, strongest on the convexity of each whorl, disappearing on the base and near the suture, 12 in number on the last whorl. Each rib bears about six compressed tubercles, as though crossed by coarse spiral cords, which are reduced to narrow threads in the intervals, but are prominent on the ribs. The whole surface has a finer sculpture of spaced spiral threads with

numerous unequal spiral striae between them, all slightly crenulated by the close, fine growth-striae. The high and rather slender spire is composed of 6 very convex whorls, the apical ones being broken off in the type specimen. The suture is deeply constricting. The last whorl is convex, rapidly contracting below, and produced in a long, slender and nearly straight anterior canal. Aperture ovate, hardly longer than the narrow canal at the base. The outer lip is thin, and retracted in a broad shallow posterior sinus. Length 36.5, diam. 12.5 mm.; length of aperture with anterior canal 20 mm.

Japan, exact locality unknown. Type No. 70,941, A. N. S. P.

This peculiar Fusoid species has been in the collection of the Academy for a good many years, during which time I have not seen anything much like it. It may possibly belong to the *Pleurotomidae*.

BUCCINIDÆ.

Tritonidea tosana n. sp. Pl. IV, fig. 33.

Shell wide-fusiform, solid; brown, closely marked with many narrow black bands. Sculpture of numerous small longitudinal folds, which are nearly obsolete on the last whorl, disappear on its last third, and elsewhere do not pass below the periphery. There are about 15 rather acute, black primary spiral cords on the last whorl, the intervals between them densely striated with similar but smaller spirals of two or three sizes. Whorls nearly 7, slightly convex, the last inflated in the middle, contracted below. The convex, moderately prominent siphonal fasciole is sculptured like the rest of the shell. Aperture blue-white and indistinctly sulcate within, the throat smooth; posteriorly it is acute and slightly channelled, there being a small callous pad on the inner lip. Outer lip sulcate within, bevelled to an acute edge, which is tessellated with black and yellowish. Columella concave above, oblique and straight below, the white columellar callous showing several inconspicuous transverse plicae near the edge.

Length 22.5, diam. 12 mm.; aperture 14 mm. long.

Kashiwajima, Tosa. Types No. 85,990, A. N. S. P., from No. 1,462 of Mr. Hirase's collection.

This species is most nearly related to *T. undulata* Schepman, but differs from that in the much smaller and more numerous longitudinal folds.

Cyllene japonica n. sp. Pl. IV, fig. 34.

Shell fusiform; flesh-tinted, indistinctly marbled and mottled with white and irregularly speckled with brown; vertically rather weakly striate and spirally grooved, the grooves narrow, separated by flat in-

tervals. There are four or five grooves on the penultimate and next earlier whorls, with a smooth space one-third or one-half the exposed width of the whorl between the lowest groove and the suture. This smooth area extends upon the front of the last whorl. The back of the last whorl is grooved throughout, the grooves more widely spaced in the peripheral region. The outer lip is swollen outside as usual, and lirate within. The rounded, callous columella is closely obliquely sulcate as usual. There are 5 whorls, the apical one smooth, obtuse and rounded, the rest flat, parted by a channelled suture; the last whorl is a little concave below the suture.

Length 11.8, diam. 5.5 mm.

Hirado, Hizen. Type No. 82,144, A. N. S. P.

This species may be near the insufficiently described, unfigured *C. gibba* A. Ad., but in the absence of measurements or adequate description no comparison with that form is possible. It differs from the other species in the absence of longitudinal ribs. In the young stages the whorl is smooth on the median convexity, but spiral grooves set in there on the last whorl.

NASSIDÆ.

***Nassa semiplicata hiradoensis* n. subsp.** Pl. IV, figs. 35, 35a.

Shell ovate-turreted, solid and thick, lusterless, variously colored: (1) Yellow with the intervals between the ribs black, the mouth and outer lip banded with black; (2) dull blackish-brown, uniform or with a yellow or white peripheral band, mouth banded; (3) uniform cream-tinted, the mouth white. Sculpture of strong, rounded longitudinal folds as wide as their intervals, 11 or 12 in number on the last whorl, the last one much larger, forming a prominent, rounded, swollen varix behind the lip, usually preceded by a much smaller fold. Over the folds and intervals run coarse spiral cords, rounded or flattened, as wide as their intervals or wider, and either of even strength or weaker in the valleys. On the last whorl there are 9 to 11 of these cords. Some shells show a very minute and superficial spiral striation throughout. Whorls about 7 (the apex broken), strongly convex, the last rounded at the periphery, sloping below, with a moderately deep basal sulcus. Aperture ovate; outer lip with 7 or 8 teeth within, the lower 4 usually larger, the others small. Columella calloused, white, with 3 small transverse wrinkles. A callous cord near the posterior angle defines a small posterior sinus.

Length 16, diam. 8.5 mm.; length of aperture 7 mm.

Length 15.5, diam. 8 mm.; length of aperture 7 mm.

Hirado, Hizen. Types No. 85,999, A. N. S. P., from No. 843b of Mr. Hirase's collection.

This form is smaller than *N. semiplicata* and has stronger spiral cords throughout. It is related to *N. incrassata* and *N. festiva*.

Another form of the same species, from the same locality, is smaller, with more numerous, weaker folds, about 15 on the last whorl, and 9 spiral cords.

Length 13, diam. 6.8 mm.

Length 12, diam. 6 mm.

At Fukura, Awaji, there is another form referable to *hiradoensis*, but more elongate, with smaller folds, 15-17 on the last whorl, or obsolete on its later half, the teeth within the lip smaller. The shell is of a dull dirty yellow tint externally, the mouth yellowish-brown or chestnut-tinted within.

Length 19, diam. 9 mm.; aperture 8 mm. long.

This race looks a good deal like some forms of *N. mendica* Gld. The operculum is smooth-edged.

***Nassa semiplicata hizenensis* n. subsp.** Pl. IV, figs. 36, 36a.

Much smaller than *hiradoensis*, with the folds small and close, but not strong on the spire, weak or obsolete on the last whorl. There are weak spirals above and below on the last whorl, obsolete in the peripheral region. Whorls about 7, of which the first $1\frac{1}{2}$ are smooth, forming

bulbous, elevated protoconch. Teeth within the outer lip weak. Color purple-black, reddish-brown or olive, sometimes with a light band.

Length 10 to 11, diam. 5 mm.

Hirado, Hizen. Types No. 85,996, A. N. S. P., from No. 843c of Mr. Hirase's collection.

This form differs from *N. teretiuscula* A. Ad. by its spiral sculpture.

AQUILLIDÆ.

Tritonidæ and *Tritoniidæ* of authors.

Lampusidæ R. B. Newton, Cat. Brit. Eoc. and Oligoc. Moll. Edw. Coll., p. 145 (1891).

Lotoriidæ Harris, Catal. Tert. Moll., I, Australasian, p. 185 (1897). Kesteven, Proc. Linn. Soc. N. S. Wales for 1902, p. 443.

Septidæ Dall and Simpson, Moll. Porto Rico, p. 416 (1902); Nautilus, XVII, p. 55 (September, 1903).

The preoccupation of the name *Triton* resulting in a search for other names available for the molluscan group has led to some diversity in modern usage. The earliest available name for the group, so far as I have been able to learn, is *Aquillus* of Montfort. This name, as John-

son has pointed out,⁶ precedes *Lotorium* in the *Conchyliologie Systématique*. Its resemblance to *Aquila* is no bar to acceptance because the Latin word *aquillus* or *aquilus*,⁷ signifying dark or water-colored, is different from *aquila*, an eagle. In this connection it may be noted that Montfort used "watery" names for his other genera of *Tritons*.⁸

The genera of *Aquillidae* may therefore stand thus:

- I.—*Aquillus* Montf., *Conch. Syst.*, II, 578. Type *cutaceus* L.
(Includes the sections *Lampusia* Schum, 1817, type *pilearis* L.; *Lotorium* Montf., 1810, type *L. lotor*=*femoralis* L.; *Monoplex* Perry, 1811, type *cynocephalus* Lam.)
Subgenus *Septa* Perry, 1811. Type *S. rubicunda* Perry (= *australis* Lam.).
(Includes *Triton* Montf. and *Tritonium* Cuv.)
- II.—*Distortrix* Link, 1807. (*Distorsio* auct.)
- III.—*Priene* H. and A. Ad.
- IV.—*Colubraria* Schum., 1817. Type *maculosa* Gmel. (*Epidromus* Klein of authors).
Subg. *Cumia* Bivona, 1838, type *lanceolata* Mke.
- V.—*Apollon* Montf., 1810 (+ *Gyrina* Schum., 1817).
- VI.—*Gyrineum* Link, 1807.
(Including *Biplex* Perry, *Buffo* Montf., *Bufo* *naria* and *Lampas* Schum., etc., some of which are available for subgeneric and sectional divisions.)

Some authors recognize more than one genus among the forms referred above to *Aquillus*, but when a wide range of species is examined, the subgenera seem to merge pretty thoroughly together. Indeed *Septa* is not very distinct, except in the typical species. This subject has been ably discussed by Kesteven, with whose conclusions I fully agree. It seems to me that he has shown conclusively the untenability of *Ranularia*, *Lampusia*, *Lotorium*, etc., as generic divisions. *Colubraria* stands apart from all the other genera, and the examination of its dentition is a desideratum. It may possibly be Rhachiglossate. The subgenus *Cumia* includes small Mediterranean and Antillean species. A series of Antillean and Pacific species referred to this

⁶ *Nautilus*, XVII, p. 24 (June, 1903).

⁷ Both spellings are given in dictionaries consulted. The etymology suggested by Herrmannsen is obscure and more than doubtful.

⁸ Harris (*t. c.*, p. 186) rejects *Aquillus* because (1) its etymology is uncertain, and (2) if emended sufficiently it can be made identical with *Aquila* Brisson. It seems scarcely necessary to reply that uncertain etymology is not usually considered ground for rejection of a name, and no authorization of such a course can be found in the British Association or any later code. And to the second objection it may be urged that by a similar process of emendation about half the names in use might be changed. Harris is wide of the mark in citing *Murex lotorium* as the type of *Lotorium* Montf. It is rather hard to see how such a mistake could be made. Montfort's engraving is a characteristic representation of the common *Murex femoralis* L.

division by Tryon and others, of which *decapitatus* Reeve and *bracteatus* Hinds are typical, belongs to the Rhachiglossa, as Mr. Vanatta and the writer will elsewhere show. Mr. Kesteven has shown that *Triton speciosum* Angas is a *Trophon*.

Aquillus labiosus (Wood).

Murex labiosus Wood, Index Testac. Suppl., p. 15, Pl. 5, fig. 18a (1828).

Triton labiosus of authors.

Triton exaratum Reeve, Lischke, Jap. Meeres-Conch., II, p. 35; III, p. 30, Pl. 2, figs. 15-17. Not of Reeve!

Tritonium excavatum Reeve, Pilsbry, Catal. Mar. Moll. Jap., p. 47.

Hirado, Hizen (Hirase, No. 911).

This species has been erroneously described and figured as *T. exaratum* Reeve, an Australian form, which I have determined by comparison of numerous Australian specimens to be distinct from the Japanese species. *Aquillus exaratus* (Reve.) has a much more highly conic nucleus with more whorls; the postnephronic whorls have a flatter shoulder, and coarser secondary spiral striation. It should be deleted from the Japanese list.

There is no trustworthy or authentic West Indian record for *Aquillus labiosus*. The specimens so marked which I have seen are from shell dealers, who, like many others, have not always been careful about localities.

NATICIDÆ.

Polinoes sagamiensis n. sp. Pl. IV, figs. 37, 37a.

Shell obliquely hemispherical, solid and heavy, smooth; chestnut-brown, with the spire, a band below the suture, and an area at the base, the umbilicus and aperture white. The spire is very small, short and low, though slightly conic. Whorls 5, the last one very rapidly enlarging, globose, narrowly rounded at the base, where it curves into the umbilicus. The suture is superficial. The very oblique aperture is half round and pure white, the columellar side straight. The posterior angle is filled with a very heavy convex callous. At the middle of the columellar margin a large, rounded, flat-topped lobe projects into the umbilicus, terminating a very large spiral cord which nearly fills the axial cavity, leaving a crescentic umbilical furrow, overhung on the convex arc by a heavy rounded rib which forms the outer margin of the umbilicus.

Length 32.5, diam. 35 mm.

Hayama, a place on Sagami Bay, about 4 miles from Kamakura. Type No. 85,956, A. N. S. P., collected by Miss A. C. Hartshorne.

This is the species I listed as a form of *P. powisianus* var. *draparnaudii*

Recluz, in the *Catal. Mar. Moll. Jap.*, p. 72, having before me then a single specimen obtained by Mr. Frederick Stearns, now in his collection in Detroit. I at that time noted the differences between the specimen and *N. draparnaudii* Recl., but thought the former might be abnormal. The large size of the umbilical lobe and the strong cord around the umbilical crescent readily distinguish *P. sagamiensis* from *draparnaudii*, *effusa* Swains., *powisianus* Recl., *cumingianus* Recl. and other species of that group.

CALYPTRÆIDÆ.

Ergæa walshi ('Herm.' Rve.).

This name *Ergæa* was originally proposed for a subgenus of *Crepidula* (*Crypta*), comprising the species *C. plana* Ads. and Rve. (not Say) and *C. walshi* 'Herm.' Rve. It was J. E. Gray in 1867 who raised the group to generic rank, explained its morphology, and showed that it is related to *Calyptrea*. Gray's half-contemptuous estimate of the inability of his conchological contemporaries to appreciate morphological problems, expressed in his paper of '67,⁹ has been amply justified by the history of this genus; for in the latest works it still remains included in *Crepidula*.¹⁰ Having reached the same conclusion independently before reading Gray's paper, it was with some surprise that I found that he had exposed the facts in the case.

Ergæa is the end of a line of differentiation from *Calyptrea*, parallel in its evolution to that phylum of *Crepidula* represented by the flat white slipper-limpets of the group of *Crepidula crepidula* Linné (*C. unguiformis* Lam.) and *C. plana* Say. The two groups, arising from diverse ancestors, have reached a superficially similar appearance, by adaptation to growing inside other shells.

Ergæa walshi ('Herm.' Rve.) has been taken by Mr. Hirase at Fukura, Awaji Island (No. 1,443 of Hirase's register), and by Miss Hartshorne at Hayama, on Sagami Bay.

Amalthea conica Schum. Essai, p. 181, Pl. 21, f. 4 (1817).

Patella cassida Dillwyn, Catal. II, p. 1,037 (1817).

Hipponyx australis Lam., Quoy and Gaim., Voy. Astrolabe, III, p. 434, Pl. 72, figs. 25-34 (1834). Not *Patella australis* Lamarck.

This abundant and widespread species has been called *Hipponyx australis* by writers on the Japanese fauna. Hedley has recently shown that the Lamarckian species is a South Australian *Capulus*, a

⁹ *Proc. Zool. Soc. London*, 1867, p. 740.

¹⁰ Tryon, *Manual of Conchology*, VIII, p. 130 (1886); Fischer, *Manuel de Conchyliologie*, p. 758 (1885).

conclusion borne out by the specimens before me. Mr. Hirase has sent *Amalthea conica* from Riukiu, Hirado, Hizen, and Fukura, Awaji.

I am unable to see any differences between the shells of this species from South Australia, Japan, Mauritius, etc. Though individually variable, there seems to have been no racial differentiation. Tryon adds the following names to the synonymy of this species: *Hipponyx acutus* and *suturalis* Q. and G., *cornucopiæa* Hutton, *orientalis* Dufo.

CERITHIIDÆ.

Cerithium trailli kikaiensis n. subsp. Pl. IV, fig. 38.

Shell with the lateral outlines nearly straight above, convex in the lower half; cream-white, sparsely dotted with brownish-yellow on the spiral threads, and with beads of dull violet sparsely and irregularly scattered along the spiral cords.

Sculpture of three rather weakly tuberculate spiral cords on each of the intermediate whorls of the spire, the upper one close to the suture, the intervals between them spirally striate, there being about 4 threads in each interval, the median one largest. The upper whorls have alternate cords and threads, crossed by close longitudinal waves. On the last whorl there are about 8 principal tuberculate cords, the intervals finely, unevenly striate. The later whorls have swollen varices at intervals of about half a whorl, but they become closer above, about one-third of a volution apart. Whorls about 10. The aperture is ovate, with a sinus above defined by a cord on the inner lip. The outer lip is strengthened by a small varix, and is sulcate within, there being usually a pair of liræ between the terminations of two spiral cords of the exterior. The throat is smooth and white, showing some blackish dots through. The basal channel is very short and oblique. The inner lip is coated with a rather thick deposit of a *deep purple color*.

Length 15, diam. 7 mm.

Kikaiga-shima, Osumi. Types No. 86,001, A. N. S. P., from No. 1,503 of Mr. Hirase's collection.

Compared with *C. trailli* Sowb. from Singapore, this is a very much smaller form, paler, with more numerous varices and a purple columella.

Cerithium subscalatum n. sp. Pl. IV, fig. 39.

Shell small, turrite; brown, the spiral cords paler, the intervals darker. Sculpture of longitudinal waves or folds, about 12 on the penultimate whorl, and with one rounded varix on the last whorl opposite the aperture. The folds do not extend below the periphery on the last whorl, where they are also much weaker. Spiral sculpture of many crowded, smooth cords, three of which are larger, two near

the periphery and one at the middle of the base. There are three smaller cords between the upper and middle enlarged ones, and five between the middle and the basal cord, which is largest of all. Sometimes only the median and lower cords are enlarged. Whorls about 9, those of the spire angular at the lower third. Aperture ovate with a short, deep anterior canal, the outer lip strengthened by a moderately strong, rather narrow varix.

Length 7.5, diam. 3.2 mm.

Length 8.3, diam. 3.7 mm.

Hahajima, Ogasawara. Types No. 86,130, A. N. S. P., from No. 1,466 of Mr. Hirase's collection.

This peculiar little Cerite is very closely related to *Bittium oosimense* Watson, but differs by the number of whorls and the details of the spiral sculpture, as may be seen on comparison with Watson's excellent description and figure. It may perhaps be identical with *Bittium scalatum* Dunker. That species has been described too briefly to decide with any certainty, and it has not been figured. The species before me, however, is a true *Cerithium*, not a *Bittium*.

RISSOIDÆ.

***Rissoa tokyoensis* n. sp.** Pl. IV, fig. 40.

Shell very small, regularly tapering from the last whorl, bright chestnut colored, the very thick peristome white. Sculpture of 8 spiral cords on the last whorl, the upper four rather coarsely regularly tuberculate, those below less so, the lower two smooth. The spire and upper portion of the last whorl are indistinctly plicate longitudinally, the tubercles on the spirals being at the points of intersection. Whorls 5, convex, the first one smooth, the last whorl with a heavy white varix behind the lip. Aperture oval, the outer lip sinuous, advanced below.

Length 2.3, diam. 1.2 mm.

Tokyo Harbor. Types No. 70,910, A. N. S. P.

***Rissoa ogasawarana* n. sp.** Pl. IV, fig. 41.

Shell ovate, with a rather short, straightly conic spire. Cream-white, with some indistinct brown spots below the suture. Sculpture of rather small close longitudinal riblets, which on the last whorl do not pass below the periphery. These are crossed by about 11 spiral cords on the last whorl. There are about 5 or $5\frac{1}{2}$ slightly convex whorls, the last one with a broad rounded but rather low varix a short distance behind the thin outer lip. Aperture ovate, entire below.

Length 2.2, diam. 1.2 mm.

Hahajima, Ogasawara. Types No. 85,951, A. N. S. P., from No. 1,385 of Mr. Hirase's collection.

Rissoina rex n. sp. Pl. IV, figs. 42, 42a.

Shell solid, the lower two-thirds slowly tapering, somewhat cylindric, the upper third more rapidly tapering to an acute apex; not glossy; white. Sculpture of regular longitudinal rounded ribs, as wide as their intervals and about 19 in number on the penultimate whorl, and not extending upon the base of the last one. These ribs are crossed by numerous unequal fine spiral threads. Whorls 10, moderately convex, parted by a deeply impressed suture, the last whorl swollen behind the outer lip. Aperture small, ovate, vertical, hardly channelled below.

Length 14, diam. 4.8 mm.

Hirado, Hizen. Types No. 85,949, A. N. S. P., from No. 753 of Mr. Hirase's collection.

This large *Rissoina* seems to be rather abundant. With the type lot there was a specimen of a reddish-brown color with a small white basal tract and a light band above. The ribs are more numerous, 25 on the penultimate whorl, and there are 4 broad varices on the last 3 whorls, while the type has only 1 at the end of the last volution. The shape is also less cylindric than in the type. More material is needed to determine the status of this form.

Rissoina materinsulæ n. sp. Pl. V, figs. 43, 43a.

Shell oblong-acuminate, the outlines of the spire convex; solid, white. Sculpture of many small straight, crowded, rounded, low longitudinal riblets, the intervals transversely striate. The apex is wanting, about 6 whorls remaining. These are slightly convex and separated by a shallow, linear suture. The last whorl is swollen into a wide rounded varix behind the outer lip, the fine riblets of the rest of the surface being developed also upon it. The aperture is semioval, the thick outer lip a little advanced below; columellar margin moderately concave, truncate below by the shallow, rounded basal channel.

Length 5, diam. 2 mm.

Hahajima, Ogasawara. Types No. 85,976, A. N. S. P., from No. 1,390a of Mr. Hirase's collection.

Rissoina (Rissolina) lævicostulata n. sp. Pl. V, figs. 44, 44a.

Shell narrowly ovate-acuminate, regularly tapering from the last whorl, white, with a red-brown blush on the back of the last whorl, moderately solid. Sculpture of about 20 rounded, obliquely longitudinal, slightly sinuous ribs about as wide as the intervals, both ribs and

intervals smooth. Whorls about 8, moderately convex, the last with a very strong, heavy varix behind the outer lip, and with a convex siphonal fasciole at the base, bounded above by a groove and regularly plicate, the ribs passing over it. Aperture semioval, the outer lip thick and sinuous, columellar margin but slightly concave, a shallow but distinct channel at its base in the basal margin.

Length 4.8, diam. 2 mm.

Kamakura, Sagami. Types No. 70,906, A. N. S. P. It also occurs at Hahajima, Ogasawara, No. 1,390*b* of Mr. Hirase's collection.

This form is related to *R. costulata* Dkr., but differs by its more numerous ribs. *R. plicatula* Gld., an unfigured species, also seems to be related.

Rissoina (Zebina) tridentata (Michaud).

Rissoa tridentata Michaud, Descript. nouv. esp. Rissoa (p. 6) in Ann. Soc. Linn. de Lyon, I, 1836.

Rissoina curta Sowb., Schwartz, Monogr. Rissoina, p. 107 (1860).

R. bidentata Phil., Archiv. f. Naturg., 1845, p. 64 (Friendly Is.).

R. eulimoides A. Ad., P. Z. S., 1851, p. 279 (Capul, Philippines).

Eulima dentiens Dkr., Malak. Bl., XVIII, 1871, p. 152 (Viti Is.).

Rissoa crassilabrum Garr., Proc. Cal. Acad., I, 1857, p. 102 (Hilo).

Rissoina coronata Recl., Schwartz, Monogr. Rissoina (1860), p. 109 (Mauritius).

Kikai-ga-shima, Osumi, typical specimens of this species, which has not before been reported from the east coast of Asia. The synonymy as given by Tryon¹¹ requires some emendation in the light of the large series of specimens now available for study. The following forms, united with *R. tridentata* by him, are, in my opinion, perfectly distinct species:

Rissoa semiglabrata A. Ad., P. Z. S., 1851, p. 279.

Rissoa semiplicata Pse., P. Z. S., 1862, p. 242; *Amer. Jour. of Conch.*, III, p. 295, Pl. 24, fig. 29.

The former of these differs from all forms of *tridentata* in the more acuminate spire and the sculpture. The latter, of which specimens from Pease are before me, is a very much smaller species, with more of the spire plicate. I add to the synonymy of *R. tridentata* the *Eulima dentiens* of Dunker, of which authentic specimens are before me. It is absolutely identical with *tridentata* Mich. *R. crassilabrum* Garrett is also a typical *tridentata*, with teeth, and 8 mm. long.

Whether the toothless form *coronata* 'Recl.' Schwartz is varietally separable is doubtful, but the series before me shows that toothless individuals occur with normal *tridentata*. The size varies a good deal:

Length 5.3, diam. 2.3 mm. (Schwartz, type of *R. coronata*).

¹¹ *Man. Conch.*, IX, p. 389.

Length 6, diam. 2.6 mm. (Schwartz, type of *R. eulimoides*).

Length 6.5, diam. 2.8 mm. (Schwartz, type of *bidentata*).

Length 7, diam. 3.7 mm. (Hawaiian Islands specimen).

Length 8, diam. 4 mm. (Michaud, *R. tridentata*).

Length 8, diam. 4 mm. (Viti Islands specimen).

Length 9, diam. 5 mm. (Viti Islands specimen).

Length 10, diam. 5.3–5.7 mm. (Kikai-ga-shima specimens).

Length 10.5, diam. 4.8 mm. (Viti Islands specimen).

The sizes from 5.5 to 10.5 mm. long are represented by specimens before me. Rarely there is a varix on the penultimate whorl. The larger shells are generally somewhat distorted, and are then extremely like *Eulima*. Indeed, the whole genus or subgenus *Zebina* is excessively Eulimoid in structure of the shell, so much so as to suggest that the *Eulimidae* may have had a Rissoinoid progenitor. Probably the *Gymnoglossa*, even as restricted by Fischer, is not a natural group.

To the distribution of *R. tridentata* indicated above should be added the Red Sea localities given by Sturany¹² in his valuable report on the "Pola" gastropods. With the Japanese locality here recorded, this gives the species an enormous range in the Indo-Pacific life-area.

TURBONILLIDÆ.

Turbonilla hiradoensis n. sp. Pl. V, fig. 45.

Shell very slender, the length 5 times the greatest diameter; glossy; white, encircled by two brown lines, of which one is at the periphery of the last whorl and ascends the spire a little below the middle of the whorls, and the other revolves below the periphery of the last whorl, its upper edge being barely visible above the suture of the preceding whorls. Sculpture of nearly vertical, slightly arcuate rounded riblets, as wide as their intervals, extending from suture to suture on the spire, and on the last whorl they gradually decrease below the periphery, becoming obsolete around the axis, where the base is nearly smooth; over all there is an excessively fine, minute, dense spiral striation. On the last whorl there are 29 riblets. There are 12 convex whorls in addition to the smooth, planorboid, upturned nuclear whorl; sutures deeply impressed.

Length 8.3, diam. 1.7 mm.

Hirado, Hizen. Types No. 85,986, A. N. S. P., from No. 1,517 of Mr. Hirase's collection.

¹² "Gastropoden des Rothen Meeres" (p. 56), in *Denkschr. K. Akad. Wissensch.*, LXXIV, p. 264.

This species differs from *T. bicincta* A. Ad. by the absence of spiral liræ on the base.

A variety may be called *T. hiradoensis* var. *badia*. It is of a dark reddish-brown or purplish-brown color throughout. The specimens occurred with *T. hiradoensis*.

Turbonilla (Cingulina) terebra Dkr. Pl. V, fig. 46.

Shell slender, its length four times the diameter; lateral outlines straight; white; faintly marked with growth-lines. Sculpture of 3 spiral grooves on each whorl, the spaces between them equal, the lowest groove smaller than the others, a narrow space between it and the suture. Last whorl with the third groove nearly peripheral, several narrower grooves below it on the convex base. Whorls 11, besides the upturned planorboid nucleus. They are moderately convex and separated by deep sutures.

Length 8, diam. 2 mm.; aperture 2 mm. long.

Hirado, Hizen. No. 922*b* of Mr. Hirase's collection.

This species tapers more rapidly than *T. triarata*, and the 3 spiral grooves are parted by 2 equal spaces. The space above the upper groove is more convex than the others. In immature shells the base has numerous spiral engraved striæ, closer near the axis, but in the largest shells they become fainter.

This species must be closely related to *Cingulina subulata* Clessin,¹³ described from Macao; but the whorls are more convex, and there are spiral grooves on the base of the last whorl, which in *subulata* is said to be "nach unten gerundet, glatt." The spiral grooves are more emphatic in *T. spina* C. and F., of New South Wales and South Australia, and which has also been reported from Karachi by Melvill, *Proc. Zool. Soc.*, 1901, p. 395.

The following species of the subgenus *Cingulina* have been reported from Japan:

C. cingulata Dkr., *Moll. Jap.*, p. 16.

C. terebra Dkr., *Moll. Jap.*, p. 16.

C. circinata A. Ad., *Ann. Mag.*, 1860, VI, p. 414.

C. japonica Clessin, *Conchylien Cabinet, Eulimidae*, p. 223.

None of them have been adequately described or figured.

Turbonilla (Cingulina) cingulata (Dkr.). Pl. V, fig. 47.

In this species there are three deep equidistant spiral furrows, somewhat narrower than the intervening cords, on each whorl. Of the four cords, the upper three are equal, the lower one narrower. On the base

¹³ *Conchylien Cabinet, Eulimidae*, p. 223.

there are several spiral grooves, and some finer striæ near the axis. A well-grown specimen measures, length 10.5, diam. 2.5 mm. There are about 13 postnepionic whorls. The shell figured is from Hirado, Hizen. Dunker's type was from Deshima (near Nagasaki), also in southwestern Kyūshū.

This species is apparently close to *C. circinata* A. Ad., the type of *Cingulina*, found at Awa-shima, which is known to me by Adams' brief description only.

Turbonilla (Cingulina) triarata n. sp. Pl. V, fig. 48.

Shell very slender and long, the length about four times the greatest diameter; lateral outlines straight. White, glossy, slightly marked with growth-lines. Sculpture of three spiral grooves on each whorl, the lowest one at the suture below, the other grooves defining three nearly flat spaces, the upper one narrowest, lower widest. Last whorl with the third groove at the periphery, the base convex, very minutely and closely striate spirally. Whorls 13, besides the elevated planorboid nucleus which stands on edge at the summit. Suture channelled.

Length 9.5, diam. 2.3 mm.; length of aperture 2.1 mm.

Hirado, Hizen. Types No. 85,977, A. N. S. P., from No. 1,005 of Mr. Hirase's collection.

This form must stand near *Cingulina japonica* Clessin,¹⁴ but agrees with neither the description nor figure. Clessin states that his species has a single line running below the suture, the rest of the whorl being smooth, but he figures two more spiral lines; and the last whorl, which he says is subangular below, the base smooth, is figured with 5 spiral lines. The proportions, 11 x 1.9 mm., are more slender than *T. triarata*. One becomes accustomed to such discrepancies in Clessin's work. His ideals of descriptive zoology are not lofty.

TURBINIDÆ.

Collonia rosa n. sp. Pl. VI, fig. 53.

Shell obliquely globose-turbinate, narrowly umbilicate, rose-red, with two apical whorls yellow. Sculpture of somewhat unequal spiral cords, about as wide as their intervals, and 25 to 27 in number on the last whorl. Several of the cords, at unequal intervals, are slightly larger than the others, and all are nearly smooth except near the suture and umbilicus, where there are short radial folds. Spire short, conic. Whorls about 4, convex. Aperture but slightly oblique, circular, white, smooth and pearly within. Inner margin of the peristome thick and white. A slightly sinuous cord ascends almost vertically into the

¹⁴ *Conchylien Cabinet, Eulimidæ*, p. 223, Pl. 36, fig. 3.

umbilicus, on the side opposite the aperture. The margin of the umbilicus is more or less distinctly crenulate.

Alt. 5.5, diam. 6 mm.

Tanabe, Kii. Types No. 85,992, A. N. S. P., from No. 1,457 of Mr. Hirase's collection. Also from Tokyo Bay.

In some of the specimens, especially those not quite mature, there is some white mottling in the peripheral region, and a white area around the umbilicus. The specimens from Tokyo Bay which I provisionally refer to this species want the subsutural and umbilical plication.

PHASIANELLIDÆ.

Phasianella tristis Pils. Pl. VI, fig. 64.

Nautilus, XVII, 69 (October, 1903).

Rishiri, Kitami.

TROCHIDÆ.

Trochus hirasei n. sp. Pl. V, figs. 52, 52a.

Shell imperforate, pyramidal, with the outlines slightly convex below and noticeably concave along the upper half of the spire; base flat. White, with bold radial stripes of blood-red or purplish-red on the later whorls, the spire very minutely and copiously speckled with olive-green and red, the latter color predominating on the spiral cords. Base whitish, tessellated with blood-red oblong spots on the spiral cords. The upper half of the spire is sculptured with short obliquely vertical waves on the lower third of each whorl, terminating in nodes above the suture; above these waves there are several low, weakly granose spiral cords. The waves gradually diminish on the penultimate whorl and are nearly obsolete on the last, and the spiral cords increase in number and strength. The periphery is acutely angular in front but in fully adult shells becomes blunt behind the lip. The flat base is sculptured with about 12 very low and smoothish circular cords. The aperture is smooth and silvery within. The columella bears an acute lobe above, separated from the base by a deep incision, and it terminates below in an oblong, whitish tubercle. The umbilical region is pearly as usual.

Alt. 50, diam. 45 mm.

Tanabe, Kii. Types No. 82,104, A. N. S. P., from No. 1,295 of Mr. Hirase's collection.

Trochus hirasei differs from *T. conus* Gm.¹⁵ in its wider base, acutely

¹⁵ The synonymy of this species, which is commonly known by the non-binomial name given by Chemnitz, is as follows:

Trochus conus Gmel., *Syst. Nat.* (13), p. 3,569 (1790), based upon

Trochus acutangulus, etc., Chemnitz, *Conchyl. Cab.*, V, p. 81, Pl. 167, figl. 1,610 (1781).

angular periphery and flat lower surface. It holds a relation toward *T. conus* somewhat similar to that existing between *T. maximus* Koch and *T. niloticus* L.

This form seems to be identical with *T. turris* Philippi, *Zeitschr. f. Malak.*, 1846, p. 102 (preoc.) = *T. altus* Phil., *Conchyl. Cab.*, p. 217, Pl. 32, fig. 7 (not of Perry, 1811). The habitat of Philippi's species was unknown, but Dunker has reported it from the Inland Sea of Japan.

Four recent species of the typical section of *Trochus* are now known: *T. niloticus*, *T. maximus*, *T. conus* and *T. hirasei*.

***Chlorostoma rugatum* Gld.**

Gld., *Otia Conch.*, p. 158.

C. turbinatum A. Ad., Pilsbry, *Catal. Mar. Moll. Jap.*, p. 94, Pl. 6, figs. 9, 10.
Not of A. Adams.

I formerly figured this under the erroneous name *C. turbinatum*, but Adams described that species as umbilicate, while this is imperforate. The figures cited above are from specimens from Hakodate, the type locality. The species extends down the ocean coast of Nippon to Sagami Bay, where it has been found at Hayama, near Kamakura, by Miss A. C. Hartshorne.

***Chlorostoma rugatum sublaevis* n. subsp. Pl. V, fig. 50.**

Shell imperforate but with a rather deep pit in the place of the filled umbilicus, shaped like *C. rugatum* or more depressed, slate-black or purplish-black. *Upper surface free from oblique corrugation, or with it only weakly indicated in places.* Base weakly sculptured with low spiral cords. Axial callous white, or sometimes green-tinted and with an orange outer border.

Alt. 21, diam. 26 mm. (Kamoito, Teshio).

Alt. 26, diam. 32 mm. (Afun, Teshio).

Kamoito and Afun, Teshio, in Yesso, the types No. 80,388, A. N. S. P., from the former place.

***Clanculus hizenensis* var. *fraterculus* n. v. Pl. VI, fig. 54.**

The shell is trochiform with flattened base, straightly conic spire and rounded periphery. On a nearly white ground it is radially maculate with brown on the upper surface, with smaller spots interposed between the others at the peripheral region. The base has paler small spots on the ribs, sometimes partially arranged in radial stripes. The apical $1\frac{1}{2}$ whorls are uniform, the next whorl irregularly dotted with pink on a pale buff-brown ground. The $5\frac{1}{2}$ or 6 whorls are convex and parted by a narrow, deep suture.

Trochus altus Perry, *Conchology*, Pl. 47, fig. 3 (1811).

Trochus elatus Lamarck, *An. sans Vert.*, VII, p. 21 (1822).

Trochus senatarius Philippi, *Conchyl. Cab.*, *Trochus*, p. 324, Pl. 46, fig. 7.

The sculpture is of closely beaded spiral cords, of which there are five on the penultimate and next earlier whorls, the upper three small, the lower two much larger and wider spaced. On the last whorl there is a group of three large cords in the peripheral region, three smaller ones above them; the intervals being densely obliquely striate, with no trace of spiral striæ or secondary threads. The base, which is slightly convex, has eight subequal spirals, which are smaller and less deeply cut into beads than those above them. The intervals throughout are about equal in width to the adjacent spiral cords.

The aperture is very oblique, sulcate within, with 8 to 10 liræ, the bevelled edge fluted. The oblique columella has a low nodule above and a strong tooth at the base. Its edge is flanged outwardly. The rather narrow umbilicus is guarded by about four teeth.

Alt. 5.3, diam. 5.8 mm.

Alt. 4.5, diam. 4.5 mm.

Riukiu. Types No. 85,980, A. N. S. P., from No. 1,451 of Mr. Hirase's collection.

This form is closely related to *C. hizenensis* Pils. from Hirado, Hizen, from which it differs chiefly in the smaller size, different coloration and the splitting of the subsutural bead-cord into two.

Clanculus gemmulifer pallidus Pils. Pl. VI, fig. 63.

Nautilus, XVII, 71 (October, 1903).

Kashiwajima, Tosa.

Gibbula vittata Pils. Pl. VI, fig. 59.

Nautilus, XVII, 69 (October, 1903).

Riukiu Island.

Gibbula incarnata Pils. Pl. VI, fig. 62.

Nautilus, XVII, 70.

Kumihama, Tango.

Monilea (Rossiteria) nucleolus Pils. Pl. VI, figs. 58, 58a.

Nautilus, XVII, 70.

Euchelus lischkei n. sp. Pl. VI, fig. 55.

The shell is globose with conic spire and narrow umbilicus, moderately solid, and of a uniform purple-brown color. There are about 5 convex whorls parted by a narrow channelled suture.

The sculpture is of closely beaded spiral cords parted by intervals of about their own width. On the last whorl there are 11 of these primary cords, with, in full-grown shells, a small secondary cord in each interval. The earliest sculptured whorl has three large cords, this number being soon doubled by intercalation of new ones. The intervals are more or less strongly latticed across by threads continuous

with the beads on the spirals. The round, oblique aperture is closely lirate within. The columella is noticeably concave, and bears a weak tooth below. The narrow umbilicus is bounded by a white cord.

Alt. 7.5, diam. 6.5 mm.

Hachijo-jima, Izu. Types No. 85,979, A. N. S. P., from No. 1,395 of Mr. Hirase's collection.

This species, in form and sculpture, is much like *E. atratus* (Gm.) on a diminutive scale, but the columellar tooth is far weaker. *E. ruber* A. Ad., *E. gemmatus* (Gld). and other small granose species also have a much stronger columellar tooth.

Euchelus hachijoensis n. sp. Pl. VI, fig. 56.

Shell globose, with short spire and narrow umbilicus; spirally granose-lirate; coral-red, sparsely dotted with darker red, usually on alternate spirals above and on all the basal spirals. Whorls 4, convex, the first 1 smooth.

Sculpture of crowded, closely granose or beaded spirals, 12 or 13 in number and subequal on the last whorl, the granules weakly connected across the intervals. On the penultimate whorl the spirals usually alternate in size, as is ordinarily the case in shells where they increase in number by intercalation. The subcircular, oblique aperture is smooth or at least not distinctly sulcate inside. The columella is slightly concave and terminates in a very weak tubercle. The umbilicus is bounded by a white rib.

Alt. 4, diam. 4.5 mm.

Hachiojima, Izu. Types No. 85,978, A. N. S. P., from No. 1,395b of Mr. Hirase's collection.

This small red species has an unusually weak columellar tubercle. I do not know of any closely related form.

Euchelus (Hybochelus) cancellatus orientalis n. subsp. Pl. VI, figs. 57, 57a.

Shell similar to *E. cancellatus* of South Africa in form, but differing in having more large spiral cords, 10 at the beginning of the last whorl, each interval bisected by a small thread. Near the end of the whorl some of these threads become nearly as large as the primary cords, and minute threads of a third order appear in some of the intervals. In *E. cancellatus* there are only 8 primary cords at the beginning of the last whorl, the intervening threads are much larger, and additional threads are intercalated sooner and more numerous. The pits produced by oblique riblets are much narrower in *orientalis*, the upper series in each pair of intervals are usually subdivided, while in *E. cancellatus* the pits are regular and uniform.

Alt. 13, diam. 15 mm.

Kashiwajima, Tosa. Type No. 85,954, A. N. S. P., from No. 1,475 of Mr. Hirase's collection.

SIPHONARIIDÆ.

Siphonaria subatra n. sp. Pl. VI, figs. 61, 61a, 61b.

Shell 'oval, thin', with subcentral apex, nearly straight slopes and strongly projecting "siphon." Dark ashy-brown where eroded in the middle, blackish around the border, and gray or banded with black in the intervening zone; the interior intense black-brown with short white marks at the terminations of the ribs. Sculpture of numerous rather coarse, unequally spaced radial ribs, projecting at the edge, with much finer radial threads between them, several in each interval. The siphonal groove usually continues weakly past the apex of the cavity, its end curving forward.

Length 16-17, width 13-14.5, alt. 4 mm.

Chichijima, Ogasawara. Types No. 86,132, A. N. S. P., from No. 1,482 of Mr. Hirase's collection.

S. atra, of the South Pacific, is a much heavier and larger shell, more strongly serrate at the edge. *S. amara* Nutt. is a higher species, with the siphonal projection less conspicuous.

Siphonaria rucuana n. sp. Pl. VI, figs. 60, 60a, 60b.

Shell small, thin, steeply conic, with subcentral summit. The apex is brown, smooth and glossy, *Crepidula*-shaped, the tip curving backward and to the left. The sculpture is of 20 to 25 unequal rounded radial ribs, of which about half do not extend to the apex. The ribs are whitish-gray, the intervals generally dusky. The ribs irregularly denticulate the margin. The siphonal rib projects moderately, and shows a rather faintly impressed line along its ridge. The interior is deep-brown or even black-brown within the muscle-impression, and usually striped with brown to or nearly to the edge, between the white rib rays.

Length 8, width 6.5 to 7, alt. 3.3 mm.

Length 8.5, width 7, alt. 4 mm.

Riukiu Island. Types No. 86,131, A. N. S. P., from No. 1,364 of Mr. Hirase's collection.

This small form is unlike any of the region, and seems fairly constant in a number of specimens.

TORNATINIDÆ.

Tornatina insignis n. sp. Pl. V, figs. 49, 49a.

Shell cylindric, white, marked with slight growth-lines only. Spire rather long and slender; whorls 4 after the up-tilted nucleus, *very*

convex, the suture deep but *not in the least channelled*, the shoulder of the last whorl rounded. Aperture of the usual shape, the thin outer lip arched forward in the middle, moderately retracted above. Columella concave, with a very inconspicuous fold above.

Length 4.7, diam. 2 mm.

Hirado, Hizen. Types No. 85,984, A. N. S. P., from No. 1,271a of Mr. Hirase's collection.

Remarkable for the total absence of a channel at the suture.

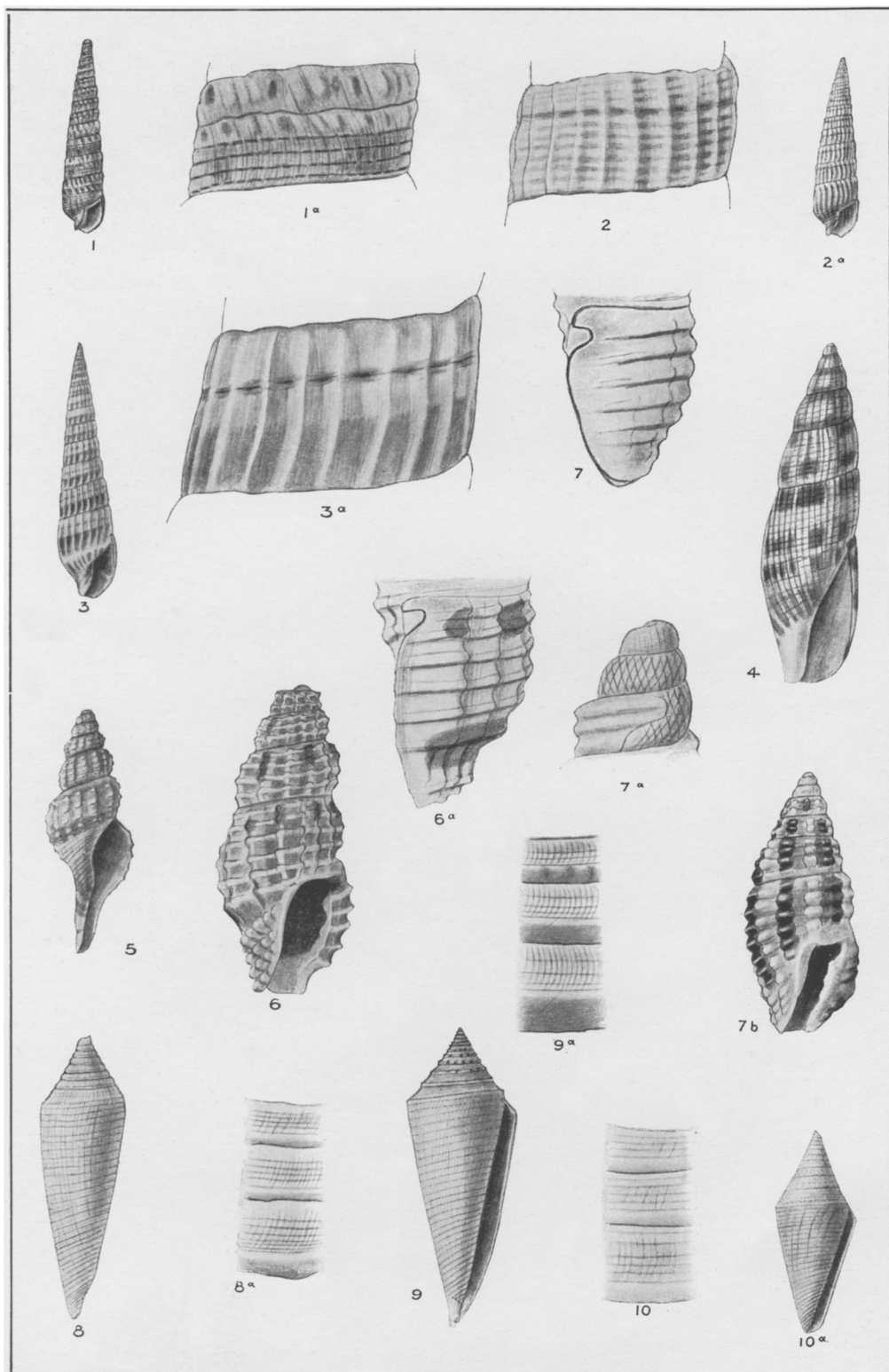
Tornatina decorata n. sp. Pl. V, fig. 51.

Shell straightly cylindric, white under a pale yellow cuticle, which is closely decorated with red-brown spiral lines; sculptured with slight growth-lines only. Spire short. Postnuclear whorls about $3\frac{1}{2}$, parted by a deeply channelled suture, which does not descend much except at the last whorl. Aperture of the usual shape, the outer lip moderately arched forward in the middle and retracted above, deeply slit at the suture. Columella callous, flattened, slightly concave, with a low fold above.

Length 6.8, diam. 3.9 mm.

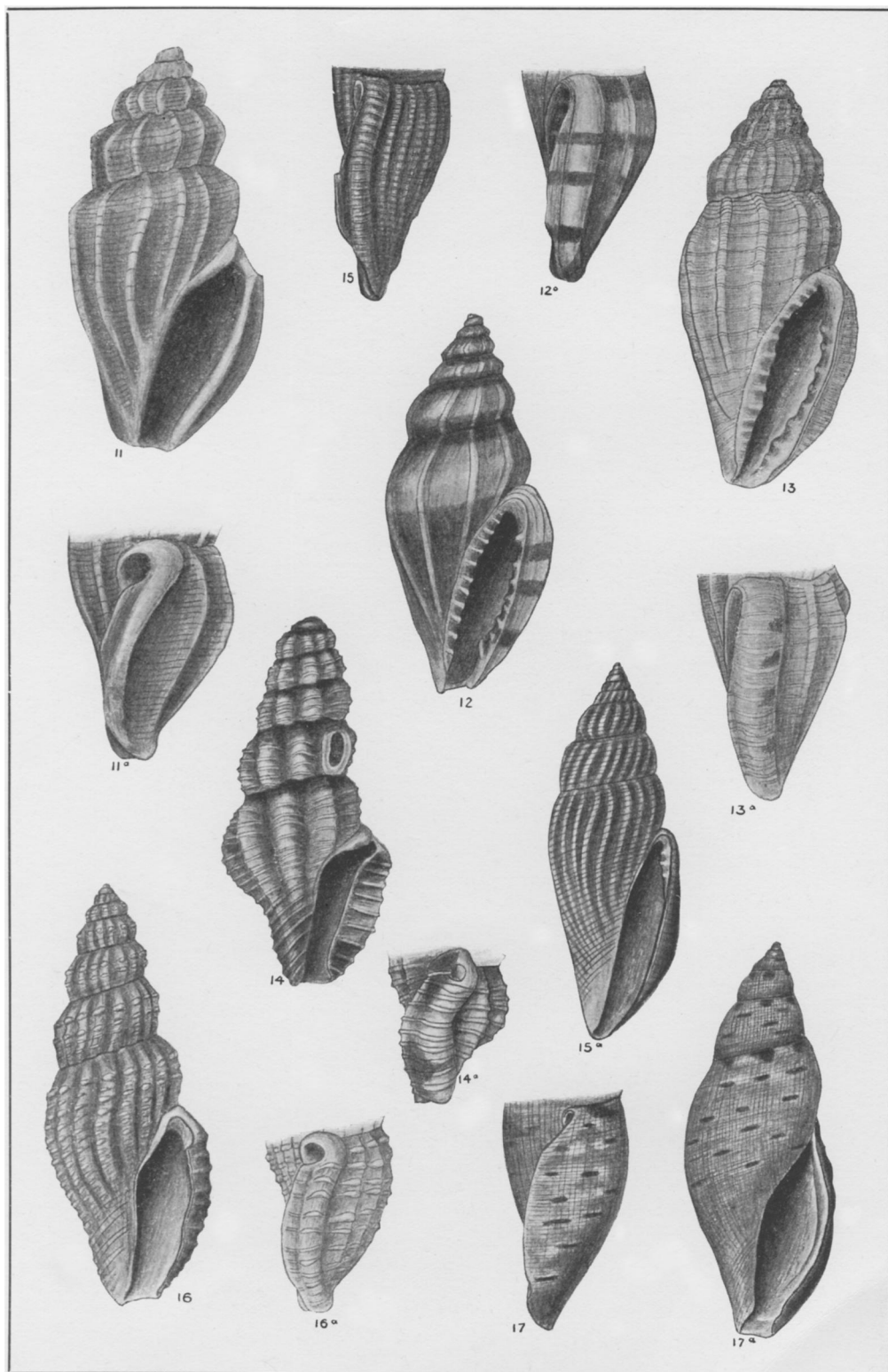
Hirado, Hizen. Types No. 85,985, A. N. S. P., from No. 1,235 of Mr. Hirase's collection.

Readily known by the brown lineolation and short spire when in good condition; but the color is solely cuticular. No similar species has been reported from the northwest Pacific.



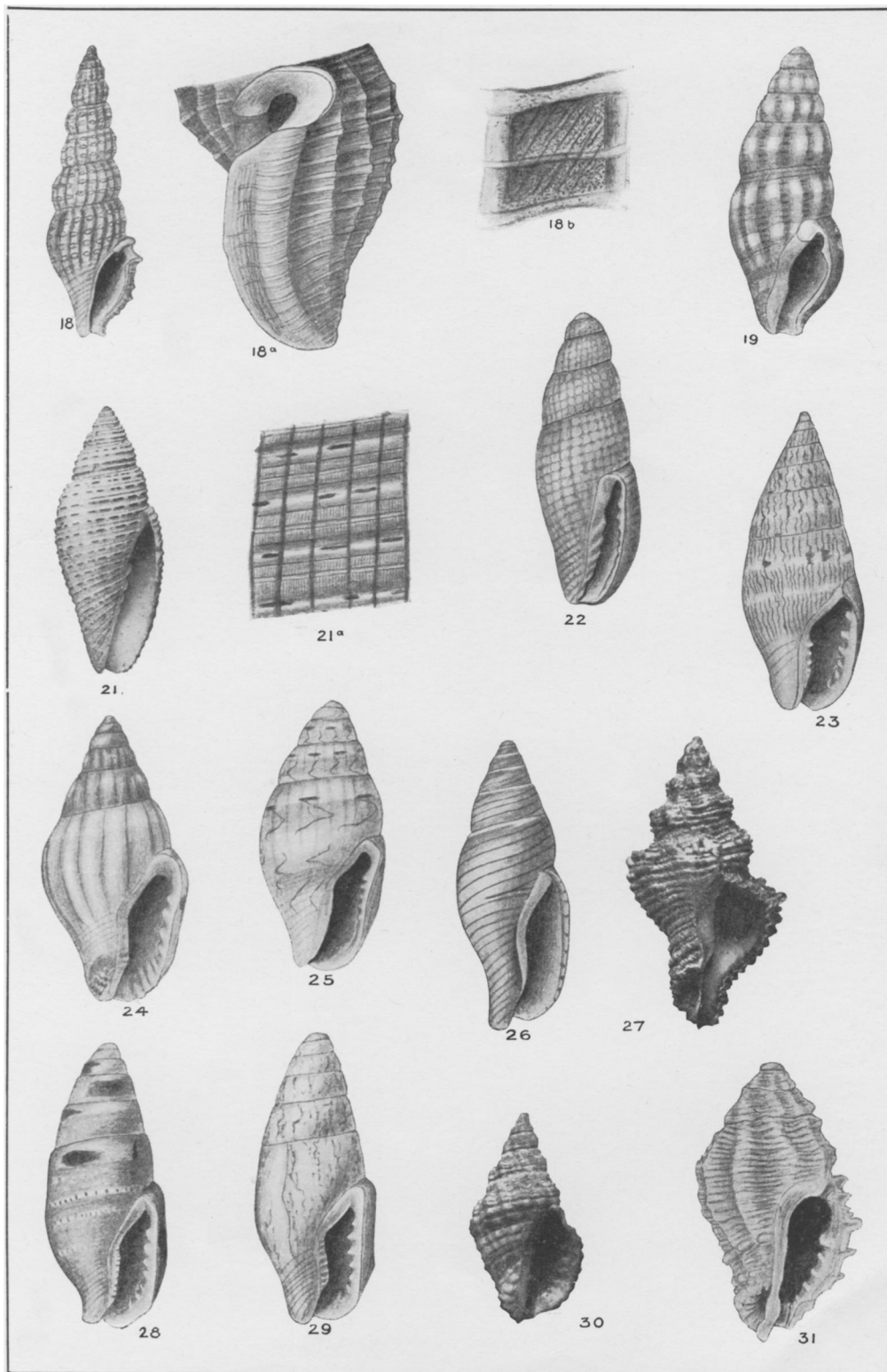
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PILSBRY. NEW JAPANESE MARINE MOLLUSCA.



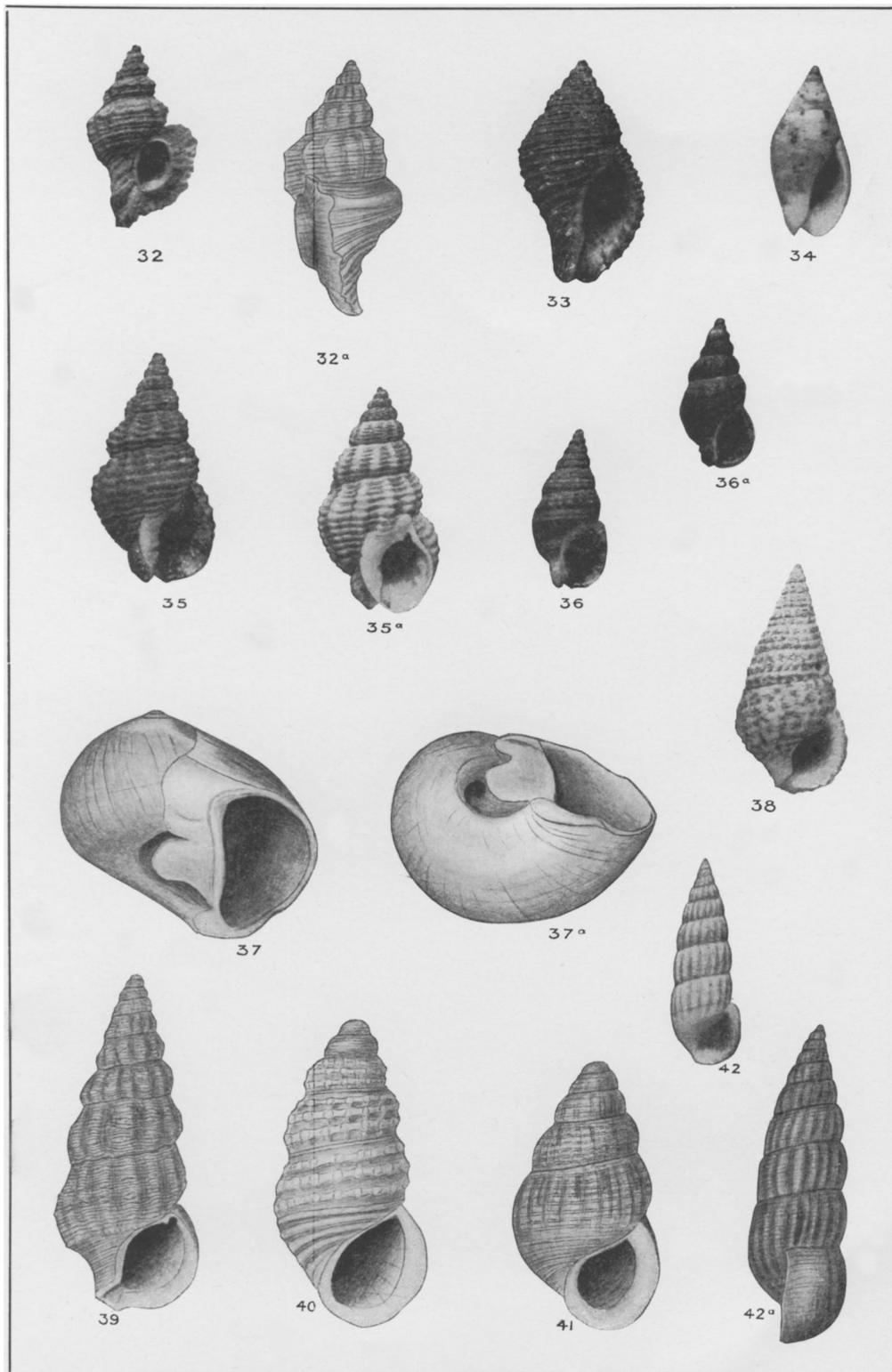
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PILSBRY. NEW JAPANESE MARINE MOLLUSCA.



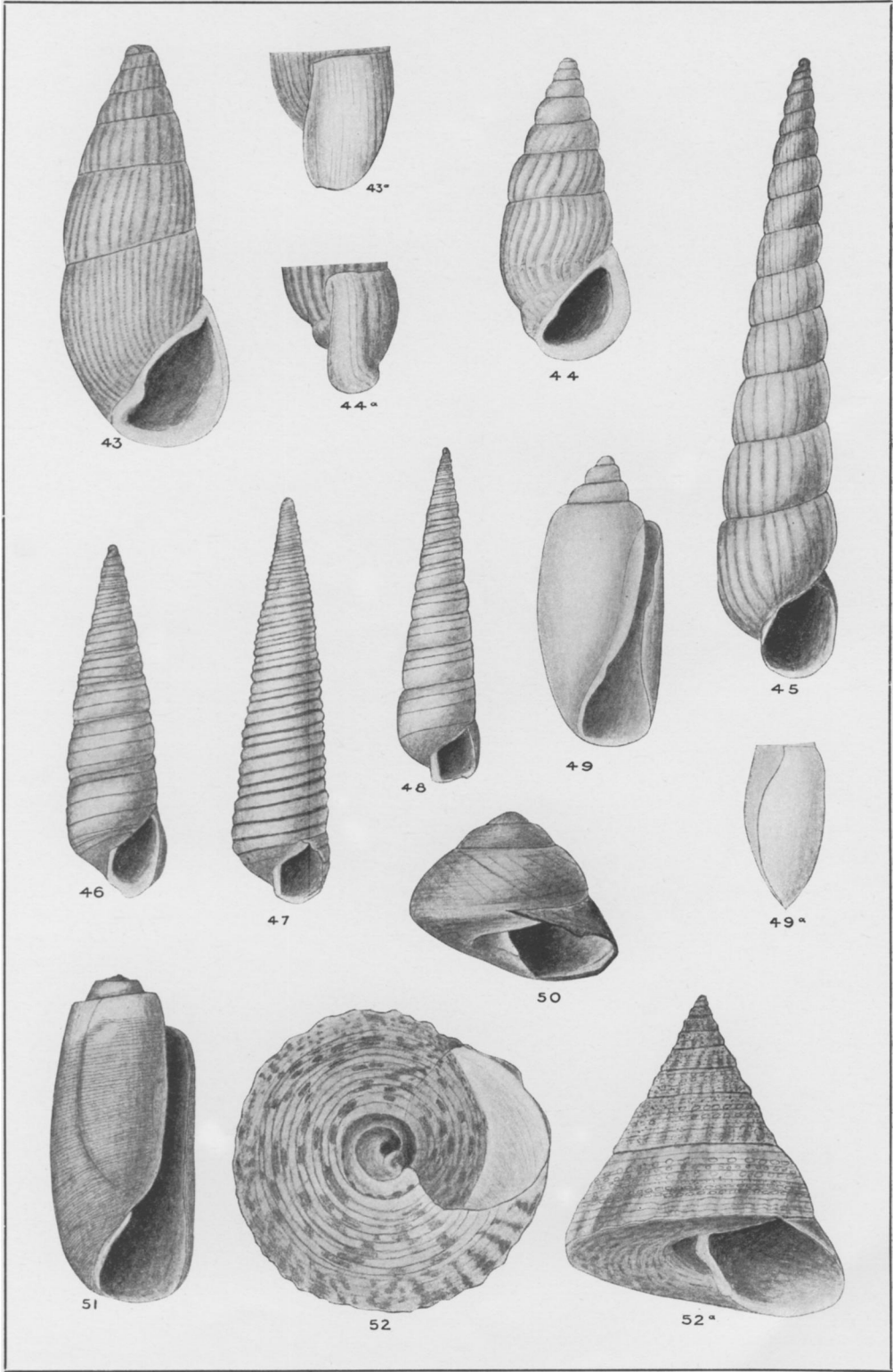
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PILSBRY. NEW JAPANESE MARINE MOLLUSCA.

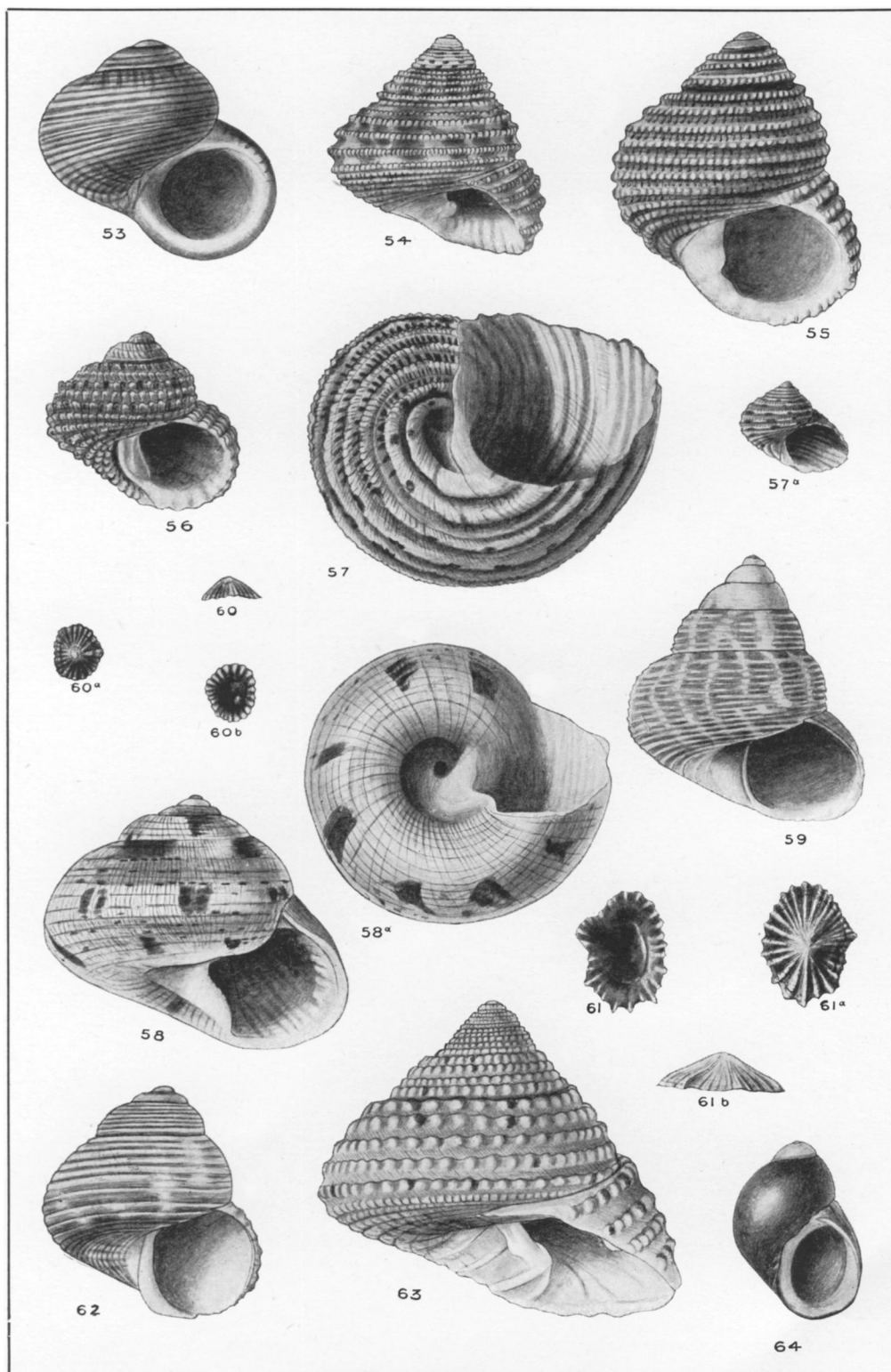


Vanatta del.

PILSBRY. NEW JAPANESE MARINE MOLLUSCA.



Vanatta del.



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PILSBRY. NEW JAPANESE MARINE MOLLUSCA.